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Review

Market power and competition: Some implications for Nigeria's economy

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The usage of market power by strong firms to compete against the weaker ones, sustain higher profits and deter entrants has become a common practice in many markets. This suggests that there is a link between market power possessions, firm concentration and competition. By examining the operations of the flour, sugar and palm olein vegetable oil companies in Nigeria, this study observed a positive relationship between market power possession and competition. Firms with market power stands at advantage during competition. The possession of market power aids attainment of higher profits, investment in capacity utilization and economic growth. Increase in competition was a major factor responsible for the growing firm concentration in Nigeria. The study suggests increased firm concentration and acquisition of idle capacities as part of the future implications for the economy.

Key words: Industrial concentration, market power, competition, efficiency

JEL Classifications: D22, L16, M13

INTRODUCTION

There is a strong connection between economic growth and rise in the share of the industrial output of any country (Chenery ,1960; Kaldor, 1966). An explanation for this relationship is that the number of participating industries would increase to raise the aggregate industrial supply in the macroeconomy. As the number of the participating industries increases, competition and innovation is created in the process to raise the quality of goods offered in the market and reduce average price level. With the increase in the firms' size, market concentration will be diluted such that it will become difficult for any single (or very few firms) to dominate the market. From the perspective of the firms, the desire to secure long run profit and existence provides a critical incentive for firms to invest and create valuable products and processes that would drive economic growth. Through the process, each firm will strive to survive and remain competitive while efficiency gains are being accumulated within the industries. The pattern of industrial growth in Nigeria in the past two decades posits a very worrisome trend for the country. Across the industries, very few firms persistently dominated the markets and are consolidating in a structure that seems to preclude the possibility of small new entrants. From cement, flour, sugar and vegetable oil industries, a few firms control the market with no new ones joining the industry. In the case of the flour companies, competition in the industry has seen to the merger, collapse and acquisition of 6 flour firms within the last seven years (Ofonyelu, 2014a). The country's flour industry is dominated by a small group of major players, such that the leading four firms control over 75% of the total market. For the sugar industry, a single firm, Dangote Sugar Refinery (DSR) has held the market share of over 70% of the consumptions in the country for over a decade and raising the entry barrier for prospective entrants. Lately, under the leadership of Goodluck Jonathan, the government promoted domestic production of vegetable oil in Nigeria by foreign multinationals companies[1]. Among the vegetable oil firms, Devon Kings and Emperor dominate the 25 liters gallon

[1] In effect, Devon Kings (produced by PZ Wilmar Foods Ltd), Power oil and Emperor (manufactured by Raffles Oil LFTZ Enterprise) entered the market to displace the foreign brands such as Gino, Turkey, Moi, Gold, Okin, etc, which had previously dominated the market.

market for deep frying and cooking and dominate the market. The two firms had their strongest hold of the market in the south western part of the country. In the south-east and the south-south parts of the country, locally bleached palm oil brands such as Goodies, Canopy, Envoy, Life, etc., were the dominant. In view of this, supplies from Devon Kings and Emperor to the south-south and south-east regions are subsidized to be able to compete with the well established local brands in the region. The price subsidy and discrimination were used as strategies by Devon kings and Emperor (in a seemingly collusive fashion) to flood the south-eastern markets. For each of the flour, sugar and vegetable oil markets, the leading firms are able to hold influence over the years and determine the direction of competitions in each of the markets because of their stronger market power, superior competitive strategy and efficiency. In markets with stiffer competition, firms tend to target quantity as a strategic variable than price. What this implies is that firms will target raising profit by selling more quantities than by raising their margins. As the dominant firms capture more markets, concentration ratio rises as the smaller firms are forced to close down, become acquired or merge. The aim of this study is to examine the implications of market power possessed by these firms and their competition strategies within the Nigerian industrial space. A positive relationship between the two suggests that the smaller firms would not be able to sufficiently compete with the stronger ones. Otherwise, smaller firms with efficient technology need be attracted into the industries to challenge the bigger but inefficient firms. The rest of this paper is sectioned as follows. Section II discussed some conceptual and theoretical issues on market power possession in Nigeria. Section III presented some methodological validation on the conceptualization of the measurement of market power in the industries while section IV linked market power possession and industrial concentration. Section V concludes the study.

Theoretical and Conceptual Issues

Three main conditions need be present before a firm can be said to possess market power in any industry. A firm possesses market power when (1) it controls a sizeable portion of the market supply (or demand) of a particular good and/or services. For the sake of specificity, we assume the firm in question must hold at least 25% shares of the total production in the industry, or at least the combined market share of the four leading firms must exceed half of the total industry output (2) it exists in a highly concentrated market with sufficient barrier to entry and exit such that the exit or entry of an additional firm would have some impact on the share of the total output, and (3) it produces a product that is price inelastic or differentiable. This in other words would imply that large increase in price would not necessarily be matched with huge demand cut. For most concentrated markets, competition will tend to be imperfect and raise the profit margin for firms (Brian, 1956; Weiss, 1989). In the main analysis, the existence of market power is tied to the demand conditions faced in the market. Thus, existence of market barrier, product differentiation and inelasticity of demand constitute supplementary factors that enhance market power possession. With product differentiation, consumers would have preference for one firm's output relative to others. A negatively sloped demand function (less than perfectly elastic) will allow firms to raise price without the sales falling significantly. If a firm can be differentiated by altering the characteristics of its product or simply by convincing the consumers that the product is different, the firm in question would be said to possess market power. A crucial factor for the existence of market power is the firm's output demand curve being negatively sloped; suggesting inadequate competition as exists in a perfect market situation. For most firms, their market power arises from superior competitive strategy and advantage (Demsetz, 1973). Where this is not curtailed, a differential advantage in expanding output and capacity over that of other firms could imply continuous increase in firm concentration until all competing firms becomes full efficient. The fear of the negative consequence of what this could imply for nations motivated a fruitful interdisciplinary collaboration between law and economics disciplines through the 1970s to 1990s in the promulgation of antitrust policies (Baker and Bresnaham, 2008; Einav and Levin, 2010). Firms, by the nature of their existence are saddled with the responsibility of fixing prices for their goods and services. Being economic agents, they seek to maximize private profit over the collective welfare of the citizenry. The likelihood and existence of moral hazard formed the basis for which many countries of the world make antitrust policies to protect her citizenry. Recent economic literature suggests that increasing firm concentration offers some veritable advantages which outweigh the cost.

Market power is observed to be inherent in all businesses. However, the extent, possession and usage vary. It refers to the ability of a firm to profitably raise the market price of a particular good or service above its marginal cost[2]. A firm is adjudged to possess market power when it can profitably raise the price of its commodity without losing most (or all) of the customers to competitors. A firm with market power has the ability to individually affect either the total quantity sold or the prevailing price in the market. The case against the big businesses is that when a small number of firms control most or all of the output of an industry, they can individually and collectively increase profit by collusion than by competition. Thus, collusion becomes an attractive strategic option for the firms, leading them into forming associations around the products they sell[3]. The occurrence of this practice is very common across many markets in

[2] Thus, suggesting that market power will rarely exist in a perfect competitive market where P=MC.

[3] These developments have become notable across many markets in Nigeria with nearly every line of business and products forming associations around itself.

Nigeria. The case of Flour Millers Association of Nigeria (FMAN), Association of Master Bakers of Nigeria (AMBN), Bread Sellers Association of Nigeria (BSAN), etc – many associations within a product in a value chain is a worrisome development which all has the effect of hampering competition and aiding collusive pricing. The fact that Flour Mills of Nigeria and Dangote Sugar Refinery (DSR) controls 45% and 70% market share in the flour and sugar markets of Nigeria respectively is particularly noteworthy. Because of the market power, these leading firms could always take actions that would determine the tone of competition and entry (or exit) in the markets. Across the industries, competition exists in three different forms: capacity utilization, market share and product differentiation (Ofonyelu, 2014b). In terms of capacity, each firms attempt to build and increase their production capacity unimpeded such as to be able to supply significant portions of the industry output as demand increases. For firms who are able to build and increase capacity, they benefit from lower average production cost which places them further at strategic position to undercut market price and/or increase market share. When a leading firm builds excessive capacity, rival firms reacts by adjusting or raising their capacities in attempt not to be dominated. At present, all of the firms possess idle capacities. Apart from the underutilization being worsened by the on-going naira-dollar crisis in Nigeria, the sustained accumulations of idle capacities by the firms portend tougher future competition and survival. The idle capacities serve as a buffer and preying strategy for market capture. Firms' idle capacities reflect the potential supply which individual firms could release to the market in the short run without recourse to building additional capacity (Ofonyelu, 2014b). For prospective new entrants, what this implies is that holders of huge idle capitals may not find it attractive to join the industrial space of the economy except in merchandising. With the dollar crisis, more companies are now limited by the amount of foreign exchange they can procure officially. For those companies whose demand is in excess of the official supply of foreign exchange, they would have to source for the shortfall at higher prices (which would be costly when factored into the production cost) or produce at the level dictated by the available amount of foreign exchange made available. The latter option may explain why many companies who do not have alternative sources to securing foreign exchange embark on supply rationing. For companies, such as Dangote (Dangote Group), Mamagold (Olams Group), etc which had international (and multinational) trading attachments, they could be availed the opportunity to obtain additional foreign exchange via their external linkage to augment the net fall in their foreign exchange demand. Because of the ongoing crisis, firms with access to additional foreign exchange are able to gain access to more market share and increase their production capacity faster than those without such privilege. A number of theoretical contributions, such as Osborne and Pitchik (1983, 1986, 1987), Allen et al. (2000), and Roller and Sickles (2000) have emphasized the strategic effect of capacity utilization on competition and how it could be used to consolidate market power possession. Were firms allowed to accumulate idle capacity and increase their market power, weaker firms suffer more as acquisition of idle capacity raise aggression on the part of the stronger firm for market capture while raising cost for the smaller firms. The concerns arise when a business with substantial degree of market power takes advantage of that power for an anti-competitive purpose. Competition delivers different advantages to the consumers and the producers. To the consumers, competition delivers lower prices, better quality, and increased choices. For the producers, it offers the firms greater opportunity to innovate and create product differentiation to maximize profit. In the absence of strong antitrust policy, a firm with market power can take advantage of its market power to drive a competitor out of business or to prevent a new competitor from starting up. The end result of this will lead to reduction in competition, harming the consumers and the wider economy because there will be higher prices and increase in market concentration.

Measuring Market Power Possession in Nigeria

A starting point in the measuring of market power is to find the difference between the prices a firm sells its product and the marginal cost. This in mathematical term can be written as

$$L = (P-MC)/P \qquad (1)$$

where L refers to the Lerner index and used to represent the market power. P is the price at which the firm sells its output, and MC is the marginal cost of the firm for the volume of output sold. It is expected that in a perfect market situation, $P = MC$ and $L=0$. What this will suggest is that all the firms sell homogeneous products such that none of them possess any market power. The problem with the use of Lerner index as an indicator of market power arising from two sources: when the products sold in the market are not homogenous and when the marginal costs of individual firms are different. Even when firms deal on similar products, they cannot be expected to have same MCs because of product differentiation. Because of brand differentiation, consumers see the various bags of flour and sugar from the individual companies as different and as a result are willing to pay varying prices for the products. In the case of the vegetable oil firms, consumers could be so attached to a specific brand such that they would rather buy the interested brand at additional price than buying an equivalent brand (substitute of similar quality) at cheaper price. The buyers care about the feature of the product in their purchasing decision. The direct implication of this is that the demand curve facing each seller will slope downward (rather than being horizontal from the perspective of the seller of a homogeneous product, where only price matters to buyers). In turn, this will mean that the profit maximizing output for the firm will be at an output where the firm equates marginal revenue (MR) with MC and $P > MC = MR$. The Lerner index is equivalent to the

Table 1. Market power possession in flour and sugar industries of Nigeria

Flour Firms/Brands	Market Share	Daily Milling Capacity (MT)	Sugar Firms	Market Share	Annual Milling Capacity (MT)
Flour Mills of Nig.(Golden Penny)	45%	8,000	Dangote Sugar Refinery	70.8%	1,400,000
Honeywell Flour Mills Plc (Honeywell Superfine flour)	21%	2610	BUA Sugar Refinery	16.2	430,000
Dangote Flour Mill	12.50%	4,800	Golden Sugar Refinery	13.2	<700,000
Life Flour	5.5%	n.a.			
Olam Group (Mama Gold)/Bua Group	11%	3769			
Valumbra flour/pure flour	2.70%	n.a.			
Crown Flour/Mix and Bake flour	1.80%	n.a.			

Source Author's Estimations

inverse of the elasticity of price in its absolute value faced by the firm when price is set to maximize profits. The equivalent formula becomes:

$$L = \frac{P-MC}{P} = \frac{1}{E} \qquad (2)$$

The Lerner index will always be between 0 and 1: the closer it is to 0, the closer the market is to perfect competition; the closer it is to 1, the higher market power the seller has and hence closer to a monopoly. A monopolist seeking to maximize profits will never be on the inelastic part of the demand curve, E < 1, which is why elasticity will always be such as ∞ ≥ E ≥ 1.

In the case of the flour and sugar firms in Nigeria, we do not expect that the marginal cost can be same or constant. We expect that P > MC as typical of any oligopolistic market. Were this to be the case, we would assume further that for each of the firms, that P = MC only when the firm operates at the full capacity. Since there is evidence that the firms accumulate excess capacities as part of their strategic plan (see Ma, 2005; Ofonyelu, 2014b). Inasmuch as none of the firms produce at full capacity level, the best approximation we can expect should be P > MC. The size of the Nigerian flour and sugar market is growing at 3.5% and 6.9% per year respectively. Measuring market power is important because antitrust laws protect competition in order to deter or regulate the exercise of market power by a monopolist or firms acting collectively (Baker and Bresnahan, 1992). Table 1 shows the production capacity of the firms in relation to their market shares.

A look at Table 1 shows some counter intuitive realities. While Dangote has a huge production capacity for flour than Honeywell, the latter enjoys larger market share because it is more accepted and had been able to improve in quality over the recent years. Also, Olams Group had through merger and acquisition of the flour assets of BUA group has been able to overtake life flour which had been a regional brand in the south-south and the south eastern part of the country. Looking at the production capacities of the firms, we can expect that future competition will be tougher and the weaker firms are always at the receiving ends when the battle is entered. One can imagine the impact that market power possession could do to the economy by recalling how the economy was brought to its knees for about two weeks because of the scarcity and hoarding of petroleum products that occurred through the month of March to the middle of April, 2016. One-week disruption in the production plant of FMN in February caused flour prices to panic into March; one month after production had fully resumed. In the same vein, one week-stoppage in the sales of dangote sugar in February 10 -15, 2016 caused long disruptions in the production cost of the breweries, bottling companies and many other allied firms who depend much on sugar as input because of the huge scarcity it created in the sugar market and the attendant price hike. Since DSR controls the dominant share of the market, a sudden requirement from the smaller competitors (such as GSR) to raise its production capacity to match-up the new demand would only happen amidst scarcity and higher prices. Based on the milling capacities shown in Table 1, the milling capacity of DSR is more than that of the other sugar firms joined together. In the case of the flour firms, FMN has about 40% capacity to satisfy the whole market. What this implies is that even if DSR should halt production, the supply by the other firms cannot match the market demand. As a result, it will always been in the interest if the DSR to play a market and price leadership role in the same way as for FMN. When people know that a particular firm possess strong market power, such firms become susceptible to frequent manipulations from external economic agents, and such disruptions do spur huge profits for the wholesalers and other sellers along the distribution and supply chain. This factor may also explain why many economic agents would always be interested in frequent disruptions in accessibility of petroleum products in the country because of the quick profits it offers the perpetrators. The same reason may explain the reason for the frequent volatility in the price of sugar in Nigeria. It is always difficult to increase flour price in Nigeria with the FMN being the party. In the same vein, Devon Kings is always the first to pull for change in price in vegetable oil market.

The foregoing discourse suggests that P > MC in all of the firms and evidenced that the firms had market power. A more comprehensive measure of market power is the use of the Herfindahl index—the summed squares of firm sizes, with the sizes expressed as proportions of the total industry size[4]. Market power possession had been a fundamental factor for the occurrence of price panicking in the petroleum, flour, sugar and foreign exchange market in the country in the recent years (Ofonyelu, 2015). Because sellers (wholesalers/retailers) know that a particular firm possesses strong market power, they would tend to over stock and make excess demand whenever they fear impending scarcity and raise their prices. This kind of activity has been a major factor for frequent instability in the prices of petroleum products, exchange rate, rice, sugar and flour products in the country. Nigeria feels the brunt of these in the poor performance of macroeconomic policies and high inflationary pressures despite the short run growth that is being spawned by the actions.

The Link between market power possession, concentration and competition

Industrial concentration and market power vary considerably across industries in Nigeria. In the flour, sugar and palm olein vegetable oil industries, the four largest companies produce well over 90 percent of the industry's output. At the other extreme the four largest firms in wooden household furniture, plastics, bottled water, and paint and emulsions sell well below 40 percent. An estimation of the average four-firm concentration ratio for all Nigerian industries is well above 60 percent. This suggests that the Nigeria's industrial market space is essentially oligopolistic. As the bigger firms intensify competition to capture more markets, prices are driven down while the small and high cost firms are driven out. During such competitions, it is only the very efficient and/or low cost firms that will be able to remain in the markets as profit incentives become seriously eroded. The large companies will be able to lower their average costs by increasing their outputs and market share. Gilligan (1985) had noted that successful competition help to increase concentration. The rigors of competition help to weed out firms that are poorly managed and motivate firms to find ways to cut costs. The schema below shows the expected transmission mechanism through which increasing competition could cause increased concentration.

$$C\uparrow \qquad P\downarrow \Longrightarrow N\downarrow \Longrightarrow r\uparrow \Longrightarrow$$

where $C\uparrow$ indicates a rise in competition leading to a fall in the average prices ($P\downarrow$) and flooding of the market as a result of excess supply by the leading firms, which in turn causes the number of the competing firms to fall ($N\downarrow$), thereby causing the concentration ratio to rise ($r\uparrow$). The above schema supposes bidirectional causality in relationship between the tempo of competition, C and industrial concentration ratio, r. In the past one decade, the flour industry had witnessed stiff competitions; this may not be unconnected with the increase in concentration now experienced. Even where mergers and acquisition were experienced (as the case of Bua/Olams and Mama Gold flour; Dufil and Diamond Flour; Flour Mills of Nigeria and Eagle Flour, etc), the stock prices of the rival firms should have increased with announcement of the merger plan to benefit the firms (Espen, 1983), the synergy arising from the mergers are always smaller than the sum of the individual performance. The experience in the recent years, especially with the on-going dollar/naira crisis shows that small companies could rapidly increase their market share and become notable in the market if they can flexible raise their production capacity. Dangote flour and Mama Gold flour brands had within the last three months increased their production capacity by 60% and 48% respectively because of their ability to strategically gain advantage over others on the effect of the dollar crises on the company's import of wheat. While the exchange rate crisis may be seen as a short run phenomena (because of government seeming inability to sustain a pegged exchange rate system), the recent resort to flexible exchange rate[5] system would raise the dollar price and competition for the firms. Should this happen for long, the resulting competition may imply further dip in the profit of the firms, worsened chance for survival and possible collapse (and take over/merge) of the weaker firms. Since all the firms depend on imported inputs for their production, the crisis may work to raise the concentration ratio in the industry and the market power for the surviving firms.

Conclusion

This paper examined the level of market power possession and competition in flour, sugar and olien vegetable oil markets of Nigeria. Increase in competition leads to fall in average prices and lead to closure of the unproductive firms such that only the very efficient firms survive the market. To sustain market power, firms acquire excess capacity, innovate to differentiate their product, increase their efficiency and reduce prices. Because of the large scale production, market power aid attainment of higher profits, and motivate firm to expand production and lead to growth. Increase in competition was identified as a major factor responsible for the growing firm concentration in Nigeria. The study suggests that increased firm competition will lead to increased acquisition of idle capacities by the firms, higher output growth and collapse of inefficient firms.

Competing interests

The author declare that they have no competing interests

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[4] However, detailed exploration of the index as a measurement of the industrial concentration of Nigerian firm is left for another study

[5] At the conclusion of the monetary policy meeting of 23-24 May 2016, the monetary policy stance of the Central Bank of Nigeria changed from being fixed to flexible, to conserve the furthering depletion of the foreign reserve.

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